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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,563	03/23/2001	Shunpei Yamazaki	SEL 248	9704

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EXAMINER

MACCHIAROLO, PETER J

ART UNIT PAPER NUMBER

2875

DATE MAILED: 09/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,563

Applicant(s)

YAMAZAKI ET AL.

Examiner

Peter J Macchiarolo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, in regard to claims 7 and 13, the "wirings different in material from the anodes which are electrically connected to the anodes in regions where the anodes and cathodes cross each other."

Further, figure 1A must also have a proper cross section cut line, B to B'. It is unclear what cross section is being represented in figure 1C.

Further, figures 1B and 1C do not agree with figure 1A. Figures 1B and 1C show the anodes are not continuous. However, the specification and figure 1A describe the anodes as being a continuous band.

Further, figures 1B and 1C show that the auxiliary wirings are perpendicular to the anode; however, the cross section cut line does not bisect the auxiliary wires, and also, the specification and figure 1A describe the auxiliary wirings as being parallel to the anodes.

These are a few features of the invention not properly shown in the drawings. They must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objections to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to under 37 CFR 1.71, as being so incomprehensible as to preclude a reasonable search of the prior art by the examiner. For example, the following items are not understood: The specification indicates the anodes are a continuous band, however figures 1B and 1C show the anodes to be non-continuous. The specification further indicates the auxiliary wirings are disposed perpendicular to the cathodes, however the figure 1B and 1C indicate the auxiliary wirings are disposed parallel to the cathodes. Further, the specification fails to clarify if the cathode and EL layer are disposed on top of the bank, as indicated in figures 1B and 1C.

Applicant is required to submit an amendment which clarifies the disclosure so that the examiner may make a proper comparison of the invention with the prior art.

Applicant should be careful not to introduce any new matter into the disclosure (i.e., matter which is not supported by the disclosure as originally filed).

A shortened statutory period for reply to this action is set to expire ONE MONTH or THIRTY DAYS, whichever is longer, from the mailing date of this letter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The drawings and the specification fail to demonstrate wirings which are electrically connected to the anodes in regions where the anodes and cathodes cross each other, even though the claim recite this limitation. The examiner is unsure of the exact limitations of claims 7 and 13, and consequently, cannot perform a reasonable search. Further, because claims 8-12 point to claim 7, and claims 14-18 point to claim 13, they are also rejected.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoguchi et al. (USPN 5,932,327).

In regards to claim 1, Inoguchi discloses in column 12, lines 54-56, that the electrodes and the luminescent material of the device are stacked on a substrate, and the substrate is constructed from an insulating material, i.e. glass. Inouguchi further discloses in column 7, lines 12-20, that AC power can be supplied to the electroluminescent element. It is well known in the art that when AC power is supplied to an element, the induced electric charge of each electrode changes from positively charged (anodes), to negatively charged (cathodes). Therefore, the electrodes may be defined as either cathodes or anodes. Inouguchi further discloses in column 21, lines 47-55, and figure 19, P1 and P2, connection pads that are electrically connected to electrodes. These auxiliary wiring connections are connected to electrodes, which will be anodes, as stated above.

In light of the above information, it is clear that Inoguchi discloses a light emitting apparatus comprising; an insulator (figure 17, 201); anodes formed on the insulator (figure 17, 202); cathodes also formed on the insulator and orthogonal to the anodes (figure 17 and figure 20, 207); luminescent material interposed between the anodes and cathodes (figure 17, 204) and auxiliary wirings electrically connected to the anodes (figure 19, P1 and P2, and column 21, lines 47-55).

In regards to claim 2, Inoguchi discloses all of the limitations of claim 1 (above), and further discloses in column 21, lines 47-55, that the auxiliary wiring connections P1 and P2 are formed from a metal film.

In regards to claim 3, Inoguchi discloses all of the limitations of claim 2 (above), and further discloses in column 21, lines 47-55, that the auxiliary wiring connections P1 and P2 are formed from a metal film, such as that made of Au, which is accepted nomenclature for gold.

In regards to claim 4, Inoguchi discloses all of the limitations of claim 1 (above), and further discloses in column 13, lines 30-34, and figure 2, 7, an electrode formed of an optically transparent ZnO (zinc oxide) and Ga₂O₃ (gallium oxide).

In regards to claim 6, Inoguchi discloses all of the limitations of claim 1 (above), and further discloses in figure 28, a DMM (digital multimeter) using an apparatus according to claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoguchi et al. (USPN 5,932,327) in view of Yudasaka et al. (USPN 6,359,606).

In regards to claim 5, Inoguchi discloses all the limitations recited in claim 1 (above). Inoguchi further discloses a substrate made of glass in column 12, lines 64-66 and figure 2, 1.

Inoguchi is silent to the anodes and cathodes electrically connected to a driver circuit formed on the substrate made of glass.

However, Yudasaka teaches in column 7, lines 63-67, and figure 1, 3, that the anodes are electrically connected to a data drive circuit, and the cathodes are electrically connected to the scanning side drive circuit, and both drive circuits are formed in a peripheral area of the

substrate. Yudasaka further teaches in columns 7 and 8, lines 63-67 and 1-13, when the driver circuit of the light emitting device is formed on the substrate, it becomes possible to wire the drive circuits to the electrodes in such a way that reduces the load on the drive circuits.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct a light emitting apparatus according to claim 1 (above), further including the anodes and cathodes electrically connected to a data drive circuit which has been formed on a glass substrate, because it is well known that this configuration reduces power consumption and also allows for a quicker display.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (USPN 6,087,770) in view of Codama et al. (USPN 6,037,712).

In regards to claim 19, Kaneko teaches that an anode (figure 1B, 2 and 3) can be formed on an insulator (figure 1A, 1) whereby being electrically connected to auxiliary wirings (figure 1E, 7 and 8). Kaneko further teaches that a luminescent material (figure 1D, 4) can be formed on the anode.

Kaneko teaches cathodes which are suspended above the anode (figure 3), not formed on the luminescent material.

However, Codama teaches a cathode can be formed on the luminescent material in columns 2 and 3, lines 61-67 and 1-5, and further teaches the cathodes can easily be formed with an evaporation method.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct a light emitting apparatus by forming auxiliary wirings

which are electrically connected to anodes on an insulator; and forming luminescent materials on the anodes; and forming cathodes on the luminescent materials. It is well known in the art that when formed in this way, Codama's cathode is more reliable and can be mass-produced with extreme precision.

In regards to claim 20, Kaneko in view of Codama disclose all the recited limitations of claim 19 (above). Kaneko further teaches in column 6, lines 53-63 that the auxiliary wirings have more mass, and therefore, are of less resistance than the anodes.

However, the Kaneko fails to disclose that different materials are used to construct the auxiliary wirings and the anodes.

Kaneko further teaches it is desirable to utilize low resistance auxiliary wirings in order to limit an applied drive voltage drop when wiring is provided over a large area, and also to reduce the signal delay.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct a light emitting apparatus according to the method recited in claim 19 (above), wherein a material lower in resistance than that of the anode is used as the auxiliary wiring. One of ordinary skill in the art would realize that any method of reducing the resistance of the wirings would achieve the desired results taught by Kaneko (above), such as using a different, lower-resistance material for the auxiliary wires.

In regards to claim 21, Kaneko in view of Codama disclose all the recited limitations of claim 20 (above). Kaneko further teaches in column 7, lines 34-45, that the auxiliary wirings

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should contain copper as a primary component. Kaneko further teaches copper has the best cost/conductivity ratio.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct a light emitting apparatus according to the method recited in claim 20 (above), wherein the auxiliary wirings comprise copper.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoguchi et al. (USPN 5,932,327) in view of Fujii (USPN 6,008,588).

In regards to claim 22, Inoguchi teaches in figures 1 and 8, an electrode formed on an insulator; a luminescent material formed on first electrode; and a second electrode, electrically connected to auxiliary wirings, formed on the luminescent material.

Inoguchi is silent to the electrodes' polarity.

However, in column 9, lines 19-26, Fujii teaches that alternating current can be used as a current source for the device, and it produces desired luminescence.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a method of manufacture to construct a light emitting apparatus by forming cathodes on an insulator; forming luminescent materials on the cathodes; and forming anodes and auxiliary wirings electrically connected to the anodes on the luminescent materials. It is well known in the art that when AC current is supplied to two different electrodes, the polarization alternates, and the electrodes can be defined as anodes or cathodes. Consequently, Fujiis' electrodes can be defined as either cathodes or anodes.

9. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (USPN 6,087,770) in view of Fujii (USPN 6,008,588).

In regards to claim 23, Fujii discloses all the recited limitations of claim 20 (above).

Fujii is silent to the auxiliary wirings being constructed from a material lower in resistance than that of the anodes.

However, Kaneko teaches in column 6, lines 53-63 that the auxiliary wirings have more mass, and therefore, are of less resistance than the anodes. Kaneko further teaches this configuration is desirable, because with low resistance auxiliary wirings, it becomes possible to limit an applied drive voltage drop when wiring is provided over a large area, and also to reduce the signal delay.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a method of manufacture to construct a light emitting apparatus as recited in claim 22 (above), further with auxiliary wirings made from a material lower in resistance than that of the anodes. One of ordinary skill in the art would realize that any method of reducing the resistance of the wirings would achieve the desired results taught by Kaneko (above), such as using a different, lower-resistance material for the auxiliary wires.

In regards to claim 24, Fujii discloses all the recited limitations of claim 20 (above).

Fujii is silent to the exact auxiliary wirings material.

However, Kaneko teaches in column 7, lines 34-45, that the auxiliary wirings should contain copper as a primary component. Kaneko further teaches copper has the best cost/conductivity ratio.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct a light emitting apparatus according to the method recited in claim 20 (above), wherein the auxiliary wirings comprise copper.

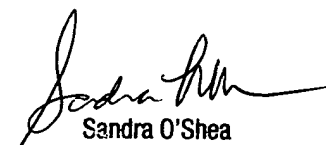
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (703) 305-7198. The examiner can normally be reached on 8 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703) 305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

pjm
September 11, 2002


Sandra O'Shea
Supervisory Patent Examiner
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